

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A method for transferring information that is not urgent from a server originally holding the information to an information-request source through a network including a plurality of routers, comprising the steps of:

determining a number (N) of relay servers based on a degree of urgency of the information;

determining at least one relay server adjacent to one of the routers located on a path between the server and the information-request source, wherein the path is set by at least one router in the network;

~~continually transmitting a monitor packet to the relay server;~~

~~measuring an average delay time and~~

relaying the information via a number of relay servers not greater than N;

transferring the information through the path such that each relay server receives the information from upstream, temporarily stores and transmits the same to downstream wherein the relay server does not comprise a portion of the direct path between the server and the information-request source.

2. (Original) The method according to claim 1, wherein the information-request source is a cache server for storing a copy of information that is likely to be accessed by a terminal.

3. (Original) The method according to claim 2, wherein transfer of information from the server to the cache server is caused by the cache server performing at least one of an automatic cache updating operation, a link prefetching operation and a cache server cooperating operation.

4. (Currently Amended) A method for transferring information that is likely to be accessed by a terminal from a server originally holding the information to a

cache server through a network including a plurality of routers, wherein the information is stored in the cache server, comprising the steps of:

providing a plurality of relay servers each being adjacent to the router and having a time slot previously assigned thereto;

determining a number (N) of relay servers based on a degree of urgency of the information;

relaying the information via a number of servers not greater than N;

determining at least one relay server located on a path between the server and the cache server, wherein the path is set by at least one router in the network;

at each relay server,

when a current time falls into the time slot assigned thereto, sending a request for transfer of the information to an upstream-located server holding the information;

when receiving the information from the upstream-located server through the path in response to the request, storing the information;

~~continually transmitting a monitor packet to the relay server;~~

~~measuring an average delay time; and~~

when receiving a request for transfer of the information from a downstream-located server, transmitting the information stored to the downstream located server through the path.

5. (Original) The method according to claim 4, wherein the time slot assigned to each relay server is determined depending on where the relay server is installed, wherein the time slot is a time period during which small traffic is predicted in an area where the relay server is installed.

6. (Currently Amended) A network system comprising:
a content-request source for requesting content that is not urgent;
a server storing the content;

a plurality of routers,
at least one relay server for relaying the content adjacent to one of the
routers; and

wherein

the content-request source comprises:

a relay controller for notifying a relay server located on a
path set by at least one router between the server and the content-request source, of
identification of the content to be obtained wherein the path includes at least a number
(N) of relay servers based on an urgency of content and, and

the at least one relay server comprises:

a storage for storing the content;

and a controller controlling such that the content is received
from upstream, is temporarily stored in the storage, and is transmitted to downstream
via a number of relay servers not greater than N, wherein the relay server does not
comprise a portion of the direct path between the server and the information-request
source; ~~the relay server adapted to receive a continuously transmitted monitor packet
for determining a delay time.~~

7. (Original) The network system according to claim 6, wherein the
content-request source is a cache server for requesting content that is likely to be
accessed by a terminal, wherein when requesting a latest version of the content that is
likely to be accessed by a terminal, the relay controller notifies the relay server located
on the path of the identification of the content.

8. (Original) The network system according to claim 7, wherein the cache
server comprises:

at least one of an automatic cache updating section, a link prefetching
section and a cache server cooperating section, which request the relay controller to
obtain the latest version of the content that is likely to be accessed by a terminal.

9. (Currently Amended) A network system comprising:

- a cache server for requesting content that is likely to be accessed by a terminal;
- a server storing the content;
- a plurality of routers,
- a plurality of relay servers, each of which is adjacent to a router relays the content; and

wherein

- the cache server comprises:
 - a relay timing memory for storing a time slot suitable for relay operation for each of the relay servers; and
 - a relay controller for notifying a relay server located on a path set by at least one router between the server and the cache server, of identification of the content to be obtained, in the time slot for the relay server wherein the path includes at least a number (N) of relay servers based on an urgency of content; and
- each of the relay servers comprises:
 - a storage for storing the content; and
 - a controller controlling such that
 - when receiving the identification of the content to be obtained from the cache server, a request for transfer of the content is sent to an upstream-located server holding the content,
 - when receiving the content from the upstream-located server through the path in response to the request, the content is stored in the storage, and when receiving a request for transfer of the content from a downstream-located server, the content stored is transmitted to the downstream-located server through the path via a number of relay servers not greater than N, wherein the relay server does not comprise a portion of the direct path between the server and the information-request

~~source; the relay server adapted to receive a continuously transmitted monitor packet for determining a delay time.~~

10. (Original) The network system according to claim 9, wherein the time slot for each of the relay servers is determined depending on where the relay server is installed, wherein the time slot is a time period during which small traffic is predicted in an area where the relay server is installed.

11. (Currently Amended) A recording medium storing a first program for instructing a content-request computer to request content that is not urgent from a server computer storing the content through a network and a second program for instructing a relay server computer to relay the content, in machine-readable form, the first program making the content-request computer function as a relay controller for determining a number (N) of relay servers based on a degree of urgency of the information and relaying the information via a number of servers not greater than N;

notifying a relay server located adjacent to a router on a path set by at least one router between the server computer and the content-request computer, of identification of the content to be obtained, wherein the relay server does not comprise a portion of the path between the server and the information-request source and a monitor packet is transmitted to the relay server to determine a delay time; and

the second program making the relay server computer function as a controller controlling such that the content is received from upstream, is temporarily stored in a storage, and is transmitted to downstream.

12. (Original) The recording medium according to claim 11, wherein the content-request computer is a cache server computer for requesting content that is likely to be accessed by a terminal, wherein when requesting a latest version of the content that is likely to be accessed by a terminal, the relay controller notifies the relay server computer located on the path of the identification of the content.

13. (Currently Amended) A recording medium storing a first program for instructing a cache server computer to request content that is likely to be accessed by a terminal from a server computer originally storing the content and a second program for instructing a relay server computer to relay the content, in machine-readable form,

the first program comprising the steps of:

storing time slots previously assigned to respective ones of a plurality of relay server computers in a network; and

determining a number (N) of relay servers based on a degree of urgency of the information and relaying the information via a number of servers not greater than N;

determining at least one relay server computer adjacent to a router located on a path between the server computer and the cache server computer, wherein the path is set by at least one router in the network, wherein the relay server does not comprise a portion of the direct path between the server and the information-request source and ~~a monitor packet is transmitted to the relay server to determine a delay time,~~ and

the second program comprising the steps of:

when a current time falls into the time slot assigned thereto, sending a request for transfer of the content to an upstream-located server computer holding the content;

when receiving the content from the upstream-located server through the path in response to the request, storing the content in a storage; and

when receiving a request for transfer of the content from a downstream-located server, transmitting the content stored to the downstream located server through the path.